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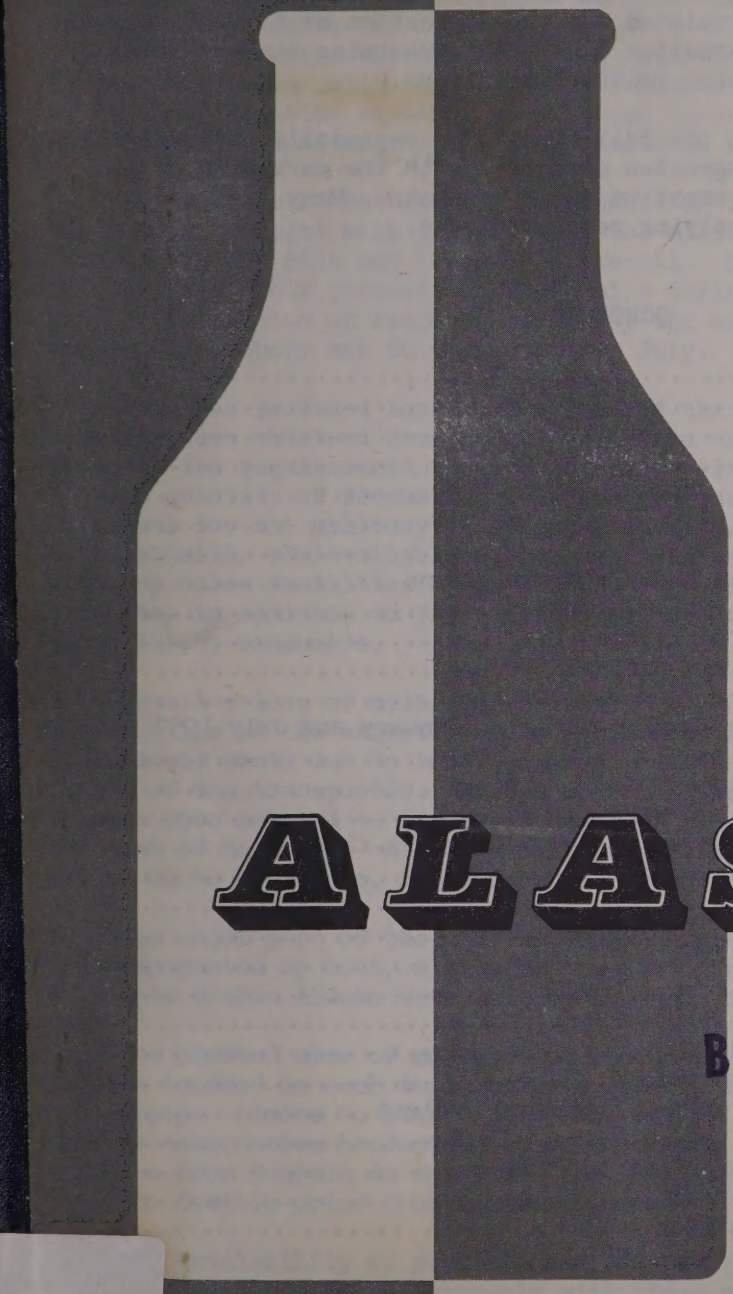

Marketing Research Report No. 385

# MARKETING MILK IN ALASKA

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## PREFACE

This study was made as a cooperative project of the Marketing Economics Research Division, Agricultural Marketing Service, and the Alaska Agricultural Experiment Station. It was formulated, at the suggestion of H. P. Gazaway of the Station, to add to the information available concerning the marketing of bottled milk and alternative dairy products in Alaska.

Data were collected during the fall of 1957 by personally interviewing persons in business firms and agencies concerned with the marketing or procurement of bottled milk or alternative dairy products. Many Alaskans contributed time and effort in supplying requested data.

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## SUMMARY

The total volume of bottled milk and its alternative products consumed monthly by civilians in six Alaskan markets surveyed and by military personnel and their dependents was estimated at 2.5 million quarts in January and in July of 1957. The amount consumed was about equally divided between the two segments of the population, with slightly more consumed by the civilians. This division of total utilization occurred even though there were about two consumers in the civilian segment to each one in the military.

In Alaska, the bottled milk purchased by civilians was mostly locally produced milk; bottled milk purchased by the military was mostly recombined milk from nonfat dry milk and cream or butteroil. Of the total volume of milk used by civilians, 46.2 percent was fresh milk during January and 45.5 percent during July. Utilization of recombined milk by the military was 69.8 percent of their supply for January and 66.8 percent for July.

Milk was produced locally for four of the six markets, and supplemental supplies were obtained from Seattle for five of the six. Milk from Seattle also supplied the requirements for two markets, neither of which had local producers. A large quantity of recombined milk was processed in Alaska, the major part of which was for the military. Concentrated milk, a product closely alternative to fresh milk, was available to consumers in three cities as well as through military sales facilities. All the usual processed and manufactured milk products, in addition to fresh milk, were generally available to both civilian and military consumers.

Retail prices of milk ranged from 34 to 50 cents per quart, depending upon the location of the market. Price variations largely resulted from differences in delivery costs due to location or to method of transport and services required of the transporter. Prices in each market for each alternative milk product were related to prices at Seattle, Alaska's major supply market, plus the cost of delivery. Alaska's milk product distributors usually received, and passed on to consumers, reduced prices for purchases of products in multiunits.

The major part of the milk products shipped from Seattle to Alaskan markets was transported by boat, although some was carried by truck. Intermarket shipments within Alaska were made by truck or by rail.

The limited size of markets and the small number of processing and sales outlets located in each tends to give sellers substantial control over prices and supply. Limits to such control are set by the number of reasonably satisfactory alternative products available and the ready availability of additional supplies from Seattle at any time that local prices became significantly greater than the Seattle price plus delivery costs.

The availability of products and of services offered consumers in each market surveyed compared favorably with those offered consumers in cities of similar size but located closer to surplus milk producing areas. Per capita sales of fluid-use dairy products to civilians in the market areas surveyed averaged 0.4 quart daily, although this fluctuated among the markets. The daily use by the military of fluid-use milk products for issue and for resale was about 0.8 quart per capita for January and 0.7 quart for July.

The Alaska market appeared to be adequately supplied with milk, although this adequacy was dependent upon consumer acceptance of alternative products with which to satisfy their requirements. Thus there are opportunities for increased local production and processing, if costs can be held in line with possible returns, if the availability of alternative supplies from Seattle is taken into account, and if local production can be equated seasonally with consumption requirements. Acceptance of alternative products by Alaskans indicates the potential of long-distance movement of fresh milk and the possibility of marketing, in markets with high production costs, alternative milk products from supply areas where production costs are low.

# MARKETING MILK IN ALASKA

By Jack E. Klein
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## INTRODUCTION

Alaskans can choose among a variety of dairy products offered to satisfy their milk requirements. These products range from fresh bottled milk to manufactured and highly concentrated products, and they are supplied from both local sources and sources distant from Alaska. This report provides information about the market for milk in the six largest of Alaska's cities and in the military establishments. The cities are Ketchikan, Sitka, Kodiak, Juneau, Anchorage, and Fairbanks. The report describes the marketing channels followed by the more important dairy products, provides estimates of their sales volume, measures the costs and prices at different market levels, and describes the competitive environment in which dairy products used for fluid purposes are sold.

Information presented here offers an estimate of the size and importance of Alaska as a market for bottled milk and alternative dairy products, as well as the relative market position of each product. It also indicates consumer acceptance of the products that are direct alternatives to fresh bottled milk and presents cost and price relationships that occur in supplying these deficit, high-cost-of-production markets distant from low-cost, surplus-producing supply areas.

Alaska offers a unique opportunity to observe and analyze market structure and marketing costs under dynamic conditions, because of the diversity of forms in which milk is made available, the variety of supply sources, and the problems involved in obtaining adequate supplies when compounded by distance, topography, and climate, augmented by the current rapid development of the State.

The data were obtained by interviewing persons in the wholesale and retail grocery businesses, dairy plant operators, dairy product distributors, and personnel of the Department of Defense charged with obtaining dairy products for troop distribution and resale to dependents. Data obtained included sales volumes, costs, and prices for January and July 1957.

## OBJECTIVES

The study was designed to add to the limited volume of information currently available concerning the amount of milk required to satisfy Alaska's needs, how that volume is obtained, and the costs involved in obtaining it. Such information will be useful to the Alaskan dairy industry in determining its potential market size, and may offer a standard of cost comparison. Persons in the dairy industry in other States may find interest in the acceptance by Alaskans of milk products alternative to fresh milk and in the costs of supplying such products to distant, high-cost, deficit-production areas from lower cost surplus-production areas.

## SOURCES OF DATA

Data for the study were obtained by interviewing persons employed in managerial or supervisory capacities by dairy processing and distributing firms and by wholesale and retail grocery firms. Personnel of military commissaries and supply facilities of the major military posts located in Alaska also were interviewed. For some items considered essential to the study, estimates were obtained when records were not available.

Firms contacted included all dairy processing plants and independent milk distributors, four of the five wholesale grocers, and four food brokers located in the six cities surveyed. Data were obtained also from a selected group of retail grocery stores in each of these cities (table 1). Sales of the retail stores included in the sample for each city represented at least an estimated 70 percent of the annual retail grocery sales for that market.

Table 1.--Number of market agencies surveyed in Alaska, by market

| Agency | Ketchikan | Sitka | Kodiak | Juneau | Anchorage | Fairbanks |
|---|---|---|---|---|---|---|
| Retail grocers | 4 | 4 | 3 | 4 | 8 | 3 |
| Wholesale grocers or food brokers 1/ | 1 | --- | --- | 2 | 2 | 3 |
| Fresh milk processors or distributors | 3 | --- | 1 | 1 | 2 | 2 |
| Military agencies | --- | --- | 1 | --- | 2 | 2 |
| Total | 8 | 4 | 5 | 7 | 14 | 10 |

1/ Food brokers represented manufacturers of dairy products such as evaporated milk, and generally solicited orders within an area larger than their city. For instance, those in Juneau also solicited in Sitka.

## THE MARKET FOR MILK IN ALASKA

The market for milk, as used here, includes the market areas served by each of the six cities and the military. Marketing of fluid milk and of related milk products in all of these cities is similar in certain respects, but quite different in others.

The six cities included in this study were selected for size and importance as markets in order to obtain as complete a coverage of Alaska's population as possible. This market selection also involved differences in marketing that would result from differences in transportation facilities, market size, and distance from supply sources.

The major point of similarity among the markets is the use of milk in a wide variety of forms for drinking and cooking. In addition to the usual fresh whole milk products such as regular whole, homogenized, and vitamin-fortified products, there are available also flavored milks and drinks, buttermilk, skim milk, and creams of various fat content. Manufactured dairy products such as dry whole milk, dry skim milk, canned evaporated milk, and canned whole milk also are readily available. Fresh concentrated milk is sold in some markets.

Factors that appear to result in marketing differences among cities are distance from supply sources, market size, and topography. Differences also seem to be related to employment characteristics of the market, including income. Combinations of these factors have resulted in a marketing system marked by differences among markets in transportation and marketing facilities and in procurement and pricing policies.

## Market Population

Alaska's civilian population was estimated by the Alaska Resource Development Board (1) to be approximately 156,000 on January 1, 1957, and (2) to fluctuate seasonally, increasing in the summer, decreasing in the winter. The number of military personnel remained relatively constant, at about 50,000, from 1952 until the reporting of such information was discontinued in July 1956. 1/ Census Bureau data in Current Population Reports, Series P-25 No. 185, issued November 13, 1958, indicated that the July 1, 1957, civilian population of Alaska was 164,000 and the military population 47,000, a total of 211,000 persons.

Most of Alaska's civilian population lives either in or near one of the six cities surveyed. These cities are located either in the "panhandle" of southeastern Alaska or in the "rail-belt" of central Alaska. 2/ Military personnel and their dependents are usually quartered on the base to which they are assigned. These bases vary widely in size and are scattered throughout the State, although the larger ones are located near major population centers.

The cities surveyed served market areas greater than that included within their limits. Therefore, the merchants contacted were asked to estimate the effective average market population served by each city (table 2). These estimates were compared with estimates given in the Ward Index of Consumer Prices in Five Alaskan Cities, prepared for the Alaskan Resource Development Board by Joseph B. Ward and Associates and released December 12, 1956. Estimates given by merchants were found to compare reasonably well with those determined in the Ward Index of Consumer Prices. Population estimates given by merchants ranged from 2,000 persons for the Kodiak market area to 50,000 for the Anchorage market area, plus 50,000 military personnel.

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1/ Estimate of Alaska Population: Series of reports released by Alaska Resource Development Board.

2/ Alaska's geographical shape offers obvious reason for local use of the term "panhandle." The "rail-belt" is the area served by the Alaska Railroad, extending from Seward to Fairbanks.

Using as a base the total population for July 1, 1957, the estimated population of the markets surveyed represents 73 percent of Alaska's total population, of which 24 percent is military personnel. The civilian segment surveyed includes 64 percent of the civilian population.

Table 2.--Estimated population for six Alaskan markets, 1957

| Market | Population 1/ | Percent of total |
|---|---|---|
| Kodiak | 2,000 | 1 |
| Sitka | 3,000 | 1 |
| Juneau | 10,000 | 5 |
| Ketchikan | 11,000 | 5 |
| Fairbanks | 2/ 27,000 | 13 |
| Anchorage | 3/ 50,000 | 24 |
| Military | 50,000 | 24 |
| Total surveyed | 153,000 | 73 |
| Total Alaska | 4/211,000 | 100 |

1/ Based on merchants' estimates.
2/ Fairbanks News-Miner, October 29, 1957, based on an interview with a project engineer employed in Civil Defense. Includes an area 20 miles in diameter from the city.
3/ The Greater Anchorage and Palmer areas.
4/ Current Population Reports, Series P-25 No. 189, November 13, 1958.

## Location of Markets

Ketchikan is located in the southern end of Alaska's "panhandle" approximately 600 miles north and west of Seattle, Wash. Of the six cities included in this study, it is the nearest to the other 48 mainland States (fig. 1). Its main industries are fishing and lumbering.

Juneau, Alaska's capital city, lies about 300 air miles north of Ketchikan. Its economy is based on governmental functions. In addition, there is a seasonal tourist trade and some fishing and lumbering.

Sitka is on an island about 100 air miles west and south of Juneau. It is the site of the Juneau area office of the Bureau of Indian Affairs and has a growing lumber industry supplying pulpwood to the Japanese market.

Anchorage is at the south end of Alaska's "rail-belt," about 1,500 air miles northwest of Seattle, Wash. It is Alaska's largest city, its principal market, center of supply, and transportation center. The major source of em-

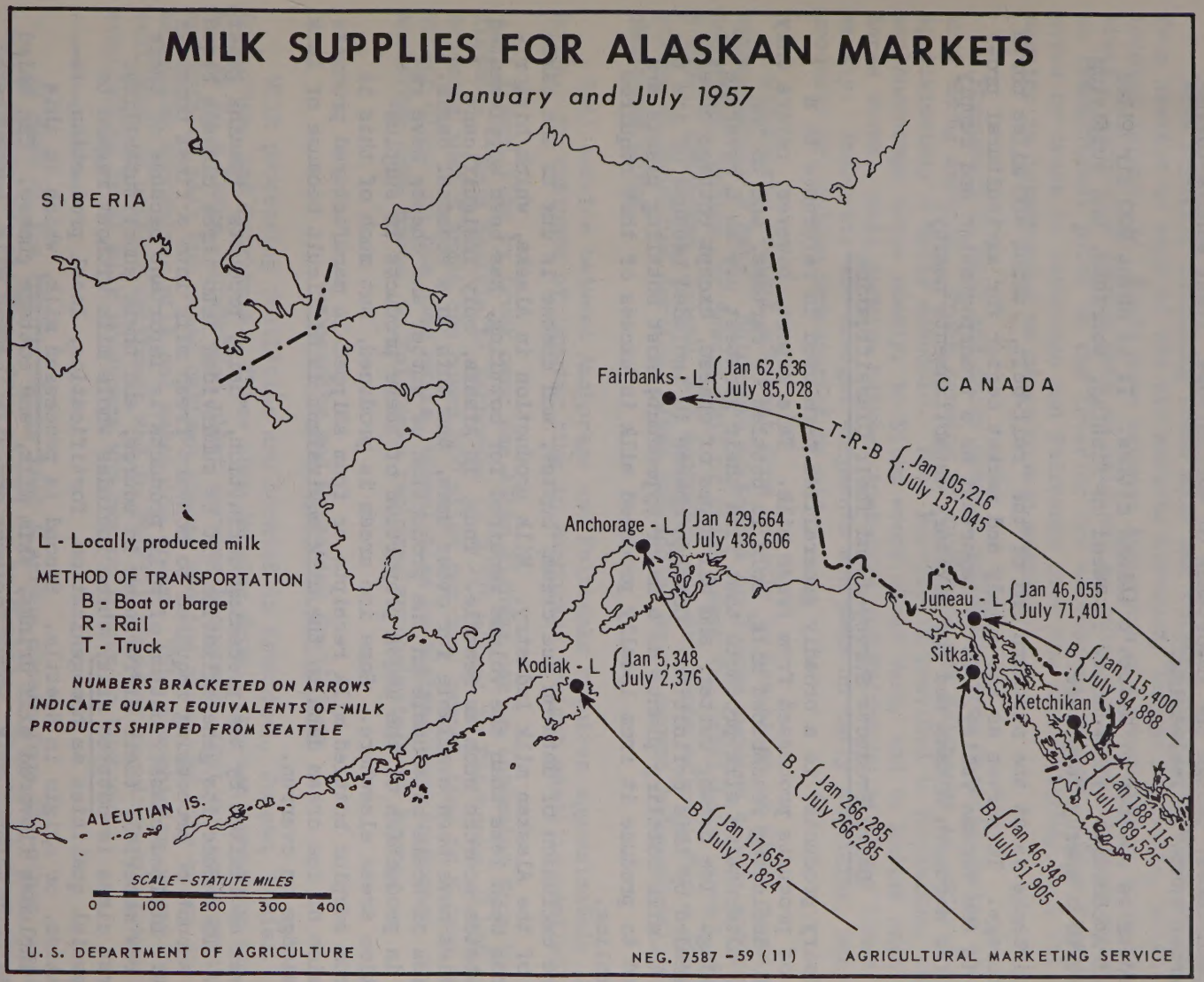
MILK SUPPLIES FOR ALASKAN MARKETS
January and July 1957
SIBERIA
CANADA
Fairbanks - L { Jan 62,636 July 85,028
T-R-B { Jan 105,216 July 131,045
Anchorage - L { Jan 429,664 July 436,606
Juneau - L { Jan 46,055 July 71,401
Sitka
Ketchikan
Kodiak - L { Jan 5,348 July 2,376
B { Jan 115,400 July 94,888
B { Jan 266,285 July 266,285
B { Jan 17,652 July 21,824
B { Jan 46,348 July 51,905
B { Jan 188,115 July 189,525
ALEUTIAN IS.
L - Locally produced milk
METHOD OF TRANSPORTATION
B - Boat or barge
R - Rail
T - Truck
NUMBERS BRACKETED ON ARROWS INDICATE QUART EQUIVALENTS OF MILK PRODUCTS SHIPPED FROM SEATTLE
SCALE - STATUTE MILES
0 100 200 300 400
U. S. DEPARTMENT OF AGRICULTURE
NEG. 7587 -59 (11)
AGRICULTURAL MARKETING SERVICE

Figure 1

ployment and income in Anchorage is military or other governmental activities and expenditures, though the importance of agriculture, light manufacturing, and tourist trade is increasing.

Kodiak is another of Alaska's island cities. It is about 200 air miles south of Anchorage. Its economy is based on fishing, tourists, and supplying services to a nearby Navy base.

Fairbanks is at the northern end of the "rail-belt," about 400 miles north of Anchorage. It serves as the supply and market center for agricultural producers in the Tanana Valley. It is important as a transportation and supply center for northern Alaska and for military establishments nearby.

## Dairy Products Surveyed and Their Classification

"Dairy products" is a broadly generalized term used in reference to a myriad of products processed from fresh milk. This report, however, refers only to milk, including recombined milk, sold in bottles or cartons, and to the various alternative milk products that find their greatest use as a beverage or in cooking. Ice cream, butter, and all types of cheese, except cottage cheese, are excluded by this definition. Cottage cheese is included because of its relation to milk bottling plants as a major byproduct; most bottling plants are equipped to produce it from locally produced milk in excess of that required for bottling.

The exclusion of data on ice cream, butter, and cheese is due to the basic nature of the Alaskan milk industry. Milk production in Alaska, which historically has been less than the volume required for bottling, has been supplemented from outside sources such as Seattle. Thus, in Alaska, only insignificant quantities have been available for other uses, and this on a seasonal basis. Economies of scale obtainable in the production of butter and cheese have resulted in production of the major proportion of these products in surplus-production areas elsewhere. Some ice cream is produced, but much of this is made from surplus bottled milk receipts or from shipped-in manufactured products. Conversion of ice cream data to the milk equivalent is difficult because of lack of knowledge on overrun.

Even as limited by the preceding definition, "dairy products" remains generalized. To reduce its generalization, it is subdivided into three classes based on the amount of processing required to convert fresh milk into a final consumer product. Limited classification of milk products is important because of their common raw material, their differences in source, and their substitutability. The first class is bottled milk, which includes whole milk without regard to such special qualities as homogenization, fortification, local production, recombination, or origin in Seattle. Second is processed milk, which in this report includes flavored milk drinks, skim milk, and cottage cheese. The third class is manufactured milk, which includes dry milk, canned milk, concentrated milk, and other milk products that require significant processing.

## Transportation Facilities

Most freight, including fresh milk and related products, moves by boat from Seattle to each of the six markets surveyed, except Fairbanks, which is located inland. 3/ Goods move between Anchorage and Fairbanks by both rail and truck. Anchorage serves both as originating point for produce grown nearby and as transhipment point to the interior for waterborne freight. Some freight moves by truck to Anchorage and Fairbanks over the Alcan Highway, but this service is interrupted at times by bad weather.

Frequency of milk and dairy product shipments from Seattle varies considerably among markets. Truck service to Anchorage and Fairbanks is offered on approximately a daily schedule. Boat service is provided to Ketchikan, Juneau, and Anchorage twice weekly, to Sitka every other week, and to Kodiak once every three weeks. Rail service between Anchorage and Fairbanks is three times weekly. Intercity air freight shipments are made on daily schedules, but dairy products are seldom transported by air.

Waterborne freight movement from Seattle to Ketchikan or Sitka requires approximately 2 days. Shipments to Kodiak or Juneau require 4 days and to Anchorage, Valdez, or Seward (all of which serve the "rail-belt" area), about 6 days. Ketchikan, Juneau, and Anchorage are all ports of call for a single voyage of scheduled service, Sitka and Kodiak being served independently by chartered ships.

Rail service between Anchorage and Fairbanks requires approximately 12 hours. No estimate of layover time in Anchorage freight yards is available.

Travel time by truck over the Alcan Highway can be estimated from the distance. From Seattle to Anchorage is 2,575 miles; to Fairbanks, 2,438 miles. Assuming that a truck can cover 500 miles per day, travel time is 5 days to either city. On the same basis, travel time by highway from Anchorage, or Anchorage area ports, to Fairbanks requires approximately 24 hours.

## Processing and Marketing Facilities

Milk processing facilities are located in Ketchikan, Juneau, Kodiak, Anchorage, and Fairbanks. These vary in size from a one-man operation at Kodiak to a large, integrated plant serving Anchorage, that not only processes and bottles milk but makes cottage cheese and ice cream. 4/ The plant in Ketchikan recombines milk and makes ice cream. This recombining operation was initiated to utilize equipment and to fulfill consumer requirements formerly supplied by local milk producers who are no longer in business.

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3/ Most of the food products that Alaskans obtain from the other continental States are obtained from suppliers in Seattle. Purchases from firms in other West Coast cities are insignificant.

4/ Cottage cheese and ice cream made in this plant are distributed in the Kodiak and Fairbanks markets, as well as in Anchorage, its main market.

Bottled milk is distributed to wholesale accounts six days per week in each city except Sitka, which has no local milk supply. Sitka grocers order from Seattle suppliers. Home deliveries of milk are made every other day in each market except Sitka and Kodiak, neither of which provides this service.

Wholesale grocery firms are located in Ketchikan, Juneau, Anchorage, and Fairbanks. Most of Alaska's wholesale grocery firms are relatively small, and most of their sales are made to small retail grocers, restaurants, or other bulk purchasers who require only small volumes. The Anchorage market is served by two comparatively large wholesale grocery firms, each of which maintains extensive storage facilities and a large and complete volume of stock.

Food brokers who are located in Juneau, Anchorage, and Fairbanks obtain and consolidate orders for different brands of food products. Major brands of dairy products distributed from Seattle are represented by a food broker in each of these three cities. Alaskan brokers generally serve an area larger than the city in which they are located, soliciting sales from buyers in other nearby cities.

Retail food stores in Alaska range in size from small family-operated stores to large multidepartment supermarkets. Stores surveyed were the largest ones in each city, each employing several persons.

## Dairy Products Used for Fluid Purposes

A variety of dairy products usable for fluid purposes are available in each market surveyed. Products available include bottled whole and processed milks and manufactured milks.

Bottled whole milk is available in each market. In two markets, Ketchikan 5/ and Sitka, all milk products are shipped in from Seattle. In Juneau, Kodiak, and Fairbanks, bottled milk from Seattle supplements local production. All bottled whole and processed milk products sold in Anchorage were processed from milk supplied by local producers.

Processed milk products are sold in each of the cities surveyed. Certain exceptions are noted that indicate limited sales of particular products or that these products were not sold during the time under consideration. The markets and products for which sales were not indicated are: Sitka, skim milk, cream; Kodiak, skim milk, whipping cream; Anchorage, whipping cream.

Manufactured dairy products were available in all six markets. Exceptions to this were dry whole milk, which was not sold in Juneau, and concentrated milk, which was not sold in Kodiak or Anchorage.

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5/ A small proportion of the milk supply in Ketchikan was locally bottled recombined milk.

## Procurement Practices

Procurement practices vary among the cities and are tailored to fit the particular circumstances that affect a given market. Practices followed have resulted from a combination of factors that include market size, transportation facilities available, and economic feasibility of producing milk locally for the market.

In Ketchikan, most grocery stores are large enough to obtain price advantages by getting supplies, including manufactured dairy products, direct from Seattle suppliers. The local wholesale firm supplies smaller purchasers and supplements the supplies of the large retail grocers. 6/

Bottled and processed milks are delivered to Ketchikan's consumers also by independent local representatives of Seattle milk processors. Development of these independent distributorships followed the discontinuance of local production at which time the dairy plant shifted from a processing operation to storage and distribution only. After this, other Seattle milk distributors interested in expanding their sales volume established local distributors in Ketchikan.

Sitka has neither a dairy processing plant nor a wholesale grocery outlet. All groceries, including dairy products, are, therefore, ordered by retailers directly from Seattle, the nearest supply point. To reduce the cost of transportation and improve their bargaining position, all merchants in Sitka order through an agent who consolidates orders and arranges for shipment.

Kodiak grocers are supplied direct from Seattle, as there is no local wholesale outlet. Dependence on out-of-market sources for milk is reduced by the availability of a limited quantity of locally produced milk. Because of Kodiak's out-of-the-way location and limited size of population, the problem of transportation has been important. Current solution of the problem is to utilize space on a ship under charter to the Navy. This serves to minimize transportation cost by increasing volume of shipments and assures scheduled arrivals. Nevertheless, the 3-week interval between scheduled deliveries necessitates quantity orders.

Juneau's larger grocery stores are of such size they can advantageously buy from Seattle suppliers. Orders are usually placed with local food brokers, but with shipments consigned to the buyers. Supplemental supplies are obtained as needed from a local wholesale grocer. As a result, most sales made at wholesale are to institutional buyers or buyers other than retail grocery stores.

Locally produced milk is processed and distributed by a cooperatively owned dairy plant. This plant also obtains milk in bulk to supplement local production at certain times during the year. Shipped-in milk is regularly available in some grocery stores competitively with the product that is locally produced, bottled or processed.

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6/ Sales are classified according to the market level toward which the seller was basically oriented. Hence, sales made by a wholesale grocer to an ultimate consumer are not segregated from sales made for resale. It was also indicated that offering "wholesale" prices to certain volume buyers was an established practice of some retail grocers.

Anchorage retail grocers, as a general practice, purchase from local wholesale outlets. This is a result of two factors: (1) The local wholesale grocers have attained sufficient size to offer an adequate service at prices competitive with those of Seattle suppliers plus transfer cost, and (2) there has been a trend toward vertical integration of wholesale and retail grocery outlets. The vertical integration has resulted in the development of chain retail outlets.

Milk is produced near Anchorage in quantities large enough to supply the entire market requirement for bottled milk and processed milk.

Food brokers in Anchorage serve as local representatives for different food brands. Their function is oriented primarily to sales promotional work rather than to obtaining orders.

## Volume of Milk Sold in Six Alaskan Markets, January and July 1957

Civilian consumers purchased 1,282,699 quarts of fluid milk equivalent during January and 1,350,883 quarts during July 1957. Thus July sales were larger by 5.3 percent than those during January. Bottled and processed milk sales, including those of recombined milk in Ketchikan, for the same comparative periods, were greater by 4.6 percent and those of manufactured milk products by 6.2 percent. Of the 13 products for which data were obtained, 9 registered gains and 4 losses in volume of sales during July relative to January. The four with decreased sale volumes were buttermilk, skim milk, whipping cream, and canned whole milk, each of which was relatively unimportant (table 3).

Data on the volume of product sales made, by market, show an inconsistent relationship between January and July. Increases ranged from 1.0 percent for Ketchikan and Anchorage to 28.7 percent for Fairbanks. Sitka had 12.1 percent greater sales in July than in January, while Kodiak and Juneau registered gains of 5.7 percent and 3.1 percent, respectively.

Comparisons of the January and July volumes of sales, by market, for manufactured dairy products are limited because only monthly average sales data were available for three of the six markets. The total volume of milk and processed milk sales was larger in July than in January in five markets and smaller in one. Gains ranged from 1.7 percent to 37.1 percent; the decrease was 6.8 percent. Sales tended to be more stable for the manufactured products than for the bottled or processed ones.

## Daily Per Capita Sales Volume

Differences in population, market facilities, sources of bottled milk, and other factors make the comparison of milk sales by product or in total inconclusive. Nevertheless, some measure of the relative importance of milk sales and of the major product division among markets is given by an average daily per capita sales volume computed from the fluid milk equivalent of each product sold and the estimated effective market population (table 4).

Table 3.--Daily sales of dairy products in fluid milk equivalents, six Alaskan markets, January and July 1957

| Product | Ketchikan | | Sitka | | Kodiak | | Juneau | | Anchorage | | Fairbanks | | Total | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Jan. | July | Jan. | July | Jan. | July | Jan. | July | Jan. | July | Jan. | July | Jan. | July |
| | Thous. quarts | Thous. quarts | Thous. quarts | Thous. quarts | Thous. quarts | Thous. quarts | Thous. quarts | Thous. quarts | Thous. quarts | Thous. quarts | Thous. quarts | Thous. quarts | Thous. quarts | Thous. quarts |
| Milk | 53.9 | 52.1 | 5.1 | 7.8 | 5.7 | 5.3 | 75.2 | 79.5 | 367.2 | 368.1 | 68.6 | 85.0 | 575.7 | 597.9 |
| Recombined milk | 16.8 | 17.4 | 2/ | 2/ | 2/ | 2/ | 2/ | 2/ | 2/ | 2/ | 2/ | 2/ | 16.8 | 17.4 |
| Buttermilk | 1.4 | 2.6 | .4 | .6 | .9 | 1.1 | 1.2 | 2.0 | 16.4 | 13.3 | 5.0 | 5.5 | 25.3 | 25.0 |
| Chocolate drink | .9 | .9 | .1 | .1 | 2/.1 | 2/ | .1 | .1 | 4.9 | 5.8 | 5.5 | 6.5 | 11.6 | 13.4 |
| Skim milk | .9 | --- | 1/ | 1/ | 1/ | 1/ | .2 | .2 | .2 | --- | .9 | .9 | 2.2 | 1.1 |
| Half & half cream | .6 | .8 | 1/ | 1/ | .1 | .1 | .3 | .4 | 4.6 | 7.4 | .1 | .1 | 5.6 | 8.8 |
| Whip cream | .3 | .4 | 1/ | 1/ | 1/ | 1/ | .4 | .1 | 1/ | 1/ | .3 | .4 | 1.1 | .9 |
| Cottage cheese | 3.2 | 5.2 | 2.2 | 2.2 | 1.9 | 1.5 | 2.4 | 2.4 | 36.3 | 41.9 | 15.8 | 14.5 | 61.8 | 67.7 |
| Total milk and processed milk | 78.0 | 79.4 | 7.8 | 10.7 | 8.6 | 8.0 | 79.7 | 84.7 | 429.6 | 436.5 | 96.2 | 112.9 | 700.1 | 732.2 |
| Evaporated milk | 88.3 | 88.3 | 18.6 | 21.8 | 12.0 | 12.0 | 52.2 | 52.2 | 176.4 | 176.4 | 30.1 | 40.4 | 377.5 | 391.0 |
| Nonfat dry milk | 18.2 | 18.2 | 17.0 | 16.0 | 1.1 | 3.0 | 28.7 | 28.7 | 64.7 | 64.7 | 23.1 | 34.2 | 152.8 | 164.9 |
| Dry whole milk | 1.4 | 1.4 | .5 | .5 | 1.2 | 1.2 | 1/ | 1/ | 7.4 | 7.4 | 1.9 | 3.4 | 12.5 | 14.0 |
| Concentrated milk | 1.4 | 1.4 | .8 | 1.3 | 1/ | 1/ | .2 | .2 | 1/ | 1/ | 15.9 | 24.5 | 18.2 | 27.3 |
| Canned whole milk | .8 | .8 | 1.6 | 1.6 | 2/ | 2/ | .6 | .6 | 17.8 | 17.8 | .5 | .5 | 21.4 | 21.2 |
| Total manufactured products | 110.1 | 110.1 | 38.5 | 41.2 | 14.3 | 16.2 | 81.7 | 81.7 | 266.3 | 266.3 | 71.5 | 103.0 | 582.5 | 618.4 |
| Total milk | 188.1 | 189.5 | 46.3 | 51.9 | 22.9 | 24.2 | 161.4 | 166.4 | 695.9 | 702.8 | 167.7 | 215.9 | 1,282.6 | 1,350.6 |

1/ No sales indicated for the month.
2/ Less than 100 quarts sold.

Table 4.--Daily per capita sales of milk by type, six Alaskan cities, January and July 1957 1/

| Market | Bottled milk 2/ | | Manufactured milk | | Total milk equivalent | |
|---|---|---|---|---|---|---|
| | Jan. | July | Jan. | July | Jan. | July |
| | Quart | Quart | Quart | Quart | Quart | Quart |
| Ketchikan | .229 | .233 | .323 | .323 | .552 | .556 |
| Sitka | .084 | .116 | .414 | .442 | .498 | .558 |
| Kodiak | .140 | .128 | .231 | .262 | .371 | .390 |
| Juneau | .258 | .273 | .263 | .263 | .521 | .536 |
| Anchorage | .277 | .282 | .172 | .171 | .449 | .453 |
| Fairbanks | .115 | .135 | .086 | .123 | .201 | .258 |
| Total | .219 | .229 | .182 | .194 | .401 | .423 |

1/ See table 2 for estimated population.
2/ Includes processed milk.

The average daily per capita sales volumes varied between months, between the two major product divisions, and among markets. Some of the differences exhibited between product divisions may be attributed to the availability of locally produced fresh milk. Differences between months are due in part to the use of an estimated average population in computing per capita sales. Further comparison shows that manufactured dairy products supply half or more of the total milk equivalent sales for the four smallest cities for both months, and for Fairbanks for July. Even so, slightly over half of the total requirement for the six cities surveyed was supplied by bottled milk.

Average daily sales for Fairbanks appear unduly low relative to the other market areas. This may be due to an overestimate of the effective market population resulting from the inclusion of an unknown number of military personnel and their dependents in the civilian population. To the extent that a similar effect is present in the Anchorage market, sales there also are underestimated on the average. A like effect of military personnel is improbable in the other markets because there are no military posts there or, as in Kodiak, there are adequate military quarters for all personnel.

Direct comparison of the daily per capita milk sales of each market revealed a few generalized relationships. Some of these are:

1. Anchorage, which has the largest population and is self-sufficient in its milk supply, had the largest daily per capita sales of fresh milk, followed by Juneau, which is Alaska's third largest population center but is second in the relative availability of fresh milk produced locally.

2. Kodiak, the smallest of the cities included, has a supply of locally produced milk and a higher per capita rate of sales of bottled milk than the next to smallest city, Sitka, which has no local milk source and has the lowest rate of sales of the six markets. However, total milk utilized is greater in Sitka than Kodiak.

3. Fairbanks, Alaska's second largest city, has one of the lowest sales of milk per capita even though locally produced milk is available.

4. The sales of bottled milk are less than those of manufactured milk in Sitka and Kodiak.

5. The sales per person of bottled and processed milk and of manufactured milk are nearly equal in Ketchikan, Juneau, and Fairbanks.

6. There is no evident relationship between market population and daily per capita milk sales.

## Prices Paid for Dairy Products

The prices paid for dairy products by consumers, retail and wholesale grocers, and dairy processors or distributors varied among markets. The major causes of such price variations were the differences in distance and method of transportation from the major supply points, in volume required, and in availability of locally produced milk.

### Locally produced bottled milk

Milk was produced locally and packaged in quart containers by processing plants at Juneau, Kodiak, Anchorage, and Fairbanks during both January and July. In addition, dairies serving Anchorage and Juneau packaged in half-gallon containers. The half-gallon was added to the container line in July in Fairbanks.

The price paid by consumers for quarts of locally produced bottled milk remained the same in July as in January in Kodiak and Anchorage. It increased 1 cent in Juneau and decreased 1 cent in Fairbanks. During both months, the consumer buying price of half-gallons, in the three markets where they were available, was less by 1 to 2 cents than the price of 2 single quarts (table 5).

The price paid for locally produced milk by retail grocers was even more stable than that paid by consumers. In three of the four markets in which locally produced milk was available, the price per quart paid by retailers was the same for both January and July. The only change indicated in average price occurred in Juneau, where the quart price increased by .5 cent and that of the half-gallon increased by 2 cents for July over January.

### Shipped-in bottled milk

Bottled milk shipped into Alaska was sold to consumers at prices ranging from 34 cents to 50 cents during January and from 34 to 49 cents during July. Half-gallons were priced to consumers at twice the quart price in Ketchikan, but in Sitka and Kodiak at 0.5 cent per quart less than for single quarts.

Table 5.--Locally produced bottled milk: Price to consumers, price spread, and price delivered to grocers, half-gallons and quarts, four Alaskan cities, January and July 1957

| Container size and market level | Juneau | | Kodiak | | Anchorage | | Fairbanks | |
|---|---|---|---|---|---|---|---|---|
| | Jan. | July | Jan. | July | Jan. | July | Jan. | July |
| | Cents | Cents | Cents | Cents | Cents | Cents | Cents | Cents |
| Half-gallon: | | | | | | | | |
| Price to consumers | 67.0 | 68.0 | | | 79.0 | 79.0 | | 92.0 |
| Retail price spread | 8.0 | 7.0 | | | 10.0 | 10.0 | | 13.0 |
| Price to grocer | 59.0 | 61.0 | | | 69.0 | 69.0 | | 79.0 |
| Quart: | | | | | | | | |
| Price to consumers | 34.0 | 35.0 | 50.0 | 50.0 | 40.0 | 40.0 | 48.0 | 47.0 |
| Retail price spread | 3.0 | 3.5 | 6.0 | 6.0 | 5.0 | 5.0 | 8.0 | 7.0 |
| Price to grocer | 31.0 | 31.5 | 44.0 | 44.0 | 35.0 | 35.0 | 40.0 | 40.0 |

Table 6.--Shipped-in bottled milk: 1/ Price to consumers, price spread, grocer's delivered price, transportation and handling charge, and Seattle price, five Alaskan cities, January and July 1957

| Container size and market level | Ketchikan | | Sitka | | Juneau | | Fairbanks | | Kodiak | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Jan. | July | Jan. | July | Jan. | July | Jan. | July | Jan. | July |
| | Cents | Cents | Cents | Cents | Cents | Cents | Cents | Cents | Cents | Cents |
| Half-gallon: | | | | | | | | | | |
| Price to consumer | 68.0 | 68.0 | 67.0 | 67.0 | 67.0 | 68.0 | 93.0 | 93.0 | 77.0 | 77.0 |
| Retail price spread | 12.0 | 12.0 | 12.1 | 10.3 | 8.0 | 7.0 | 10.0 | 10.0 | 7.0 | 7.0 |
| Price to grocer | 56.0 | 56.0 | 54.9 | 56.7 | 59.0 | 61.1 | 83.0 | 83.0 | 70.0 | 70.0 |
| Transportation and handling charge | 16.0 | 16.0 | 16.0 | 16.0 | 14.0 | 14.0 | 48.0 | 48.0 | 12.0 | 21.0 |
| Seattle price | 40.0 | 40.0 | 38.9 | 40.7 | 45.0 | 47.0 | 35.0 | 35.0 | 49.0 | 49.0 |
| Quart: | | | | | | | | | | |
| Price to consumer | 34.0 | 34.0 | 34.0 | 34.2 | 34.0 | 35.0 | 50.0 | 49.0 | 39.0 | 39.0 |
| Retail price spread | 6.0 | 6.0 | 6.3 | 5.3 | 3.0 | 3.5 | 6.0 | 5.0 | 4.0 | 4.0 |
| Price to grocer | 28.0 | 28.0 | 27.7 | 28.9 | 31.0 | 31.5 | 44.0 | 44.0 | 35.0 | 35.0 |
| Transportation and handling charge | 8.0 | 8.0 | 8.0 | 8.0 | 7.0 | 7.0 | 24.0 | 24.0 | 10.5 | 10.5 |
| Seattle price | 20.0 | 20.0 | 19.7 | 20.9 | 24.0 | 24.5 | 20.0 | 20.0 | 24.5 | 24.5 |

1/ Refers to milk shipped from Seattle without regard to method of transportation.

Juneau consumers also paid 0.5 cent a quart less by purchasing in half-gallons during January and 1 cent less during July. Fairbanks consumers paid 3.5 cents less per quart during January and 2.5 cents less per quart during July by purchasing milk in half-gallons rather than in quarts (table 6). The reduction in price consumers were charged for multiunit containers is a reflection of the difference in selling prices in Seattle.

The prices paid by Alaska's retail grocers for bottled milk shipped from Seattle ranged from 28 cents per quart, delivered to Ketchikan, to 44 cents delivered to Fairbanks, allowing them a price spread that varied from 3 cents to 6 cents. Prices paid by grocers for shipped-in bottled milk did not change from January to July in Ketchikan, Fairbanks, or Kodiak, although Sitka and Juneau grocers paid higher prices during July than January. Half-gallons were delivered to grocers in Ketchikan and Kodiak at a price twice that of the delivered price of two quarts, while Juneau, Sitka, and Fairbanks grocers received milk in half-gallons at a lower per-quart price than in single quarts.

Estimated transportation and handling charges 7/ per quart of milk delivered to Alaska markets from Seattle ranged from 7 cents for Juneau delivery to 24 cents for Fairbanks delivery. Half-gallons were delivered to each market at a cost twice that of quarts.

Concentrated milk

Concentrated milk was sold to civilians in the three markets of Ketchikan, Sitka, and Fairbanks. The January price to consumers was 29.6 cents in Ketchikan, 28.2 cents in Sitka, and 38.0 cents in Fairbanks for the equivalent of a quart of whole milk. The July price to consumers differed only for Fairbanks, where it was less by 1 cent (table 7).

Retail grocers of Ketchikan and Fairbanks paid the same delivered price for concentrated milk during January and July. Sitka's grocers paid a fractionally higher price for each quart equivalent delivered in July than in January.

Transportation and handling charges from Seattle to the three markets in which concentrated milk was sold were estimated as one-third of the charge for delivering a quart of bottled milk. The validity of such an estimate was based on reduced bulk and weight for equivalent volumes of the two products, although a quart of concentrated milk weighed more than a quart of bottled milk. This is, however, the best estimate of transport cost available.

Canned whole milk

Limited quantities of canned whole milk were sold in each of the six markets at consumer prices ranging from 43 cents to 49 cents per quart during both January and July. Consumers in Juneau, Anchorage, and Fairbanks paid 49 cents, and the lowest price was in Sitka (table 8).

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7/ Transportation and handling charges were based on one or more of the following: Weight, services performed, value of product, and space required. Most grocers received shipments of mixed loads and were billed on a nonitemized basis, making it necessary for them to estimate charges applicable to bottled milk.

Table 7.--Concentrated milk: Price to consumers, price spread, grocer's delivered price, transportation and handling charge, and Seattle price, quart equivalents, 1/ three Alaskan cities, January and July 1957

| Market level | Ketchikan | | Sitka | | Fairbanks | |
|---|---|---|---|---|---|---|
| | Jan. | July | Jan. | July | Jan. | July |
| | Cents | Cents | Cents | Cents | Cents | Cents |
| Price to consumers | 29.6 | 29.6 | 28.2 | 28.2 | 38.0 | 37.0 |
| Retail price spread | 6.3 | 6.3 | 4.8 | 4.5 | 6.0 | 5.0 |
| Price to grocer | 23.3 | 23.3 | 23.4 | 23.7 | 32.0 | 32.0 |
| Transportation and handling charge | 2.5 | 2.5 | 2.0 | 2.0 | 8.0 | 8.0 |
| Seattle price | 20.8 | 20.8 | 21.4 | 21.7 | 24.0 | 24.0 |

1/ One-third quart of concentrated milk is the equivalent of one quart of whole milk.



Table 8.--Canned whole milk: Price to consumers, retail price spread, price delivered to retail grocer, wholesale price spread, price delivered to wholesale grocer, transportation and handling charges, and Seattle price, quart cans, six Alaskan cities, January and July 1957

| Market level | Ketchikan | | Sitka | | Juneau | | Kodiak | | Anchorage | | Fairbanks | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Jan. | July | Jan. | July | Jan. | July | Jan. | July | Jan. | July | Jan. | July |
| | Cents | Cents | Cents | Cents | Cents | Cents | Cents | Cents | Cents | Cents | Cents | Cents |
| Price to consumers | 44.0 | 44.0 | 43.0 | 43.0 | 49.0 | 49.0 | 46.0 | 46.0 | 49.0 | 49.0 | 49.0 | 49.0 |
| Retail price spread | 4.9 | 4.1 | 6.3 | 5.6 | 8.2 | 8.2 | 6.0 | 6.0 | 7.0 | 7.0 | 5.0 | 5.0 |
| Price to retail grocer | 39.1 | 39.9 | 36.7 | 37.4 | 40.8 | 40.8 | 40.0 | 40.0 | 42.0 | 42.0 | 44.0 | 44.0 |
| Wholesale price spread | | | | | | | | | 4.0 | 4.0 | | |
| Price to wholesale grocer | | | | | | | | | 38.0 | 38.0 | | |
| Transportation and handling charge | 3.3 | 3.3 | 1.9 | 1.9 | 4.1 | 4.1 | 4.8 | 4.8 | 1.9 | 1.9 | 8.0 | 8.0 |
| Seattle price | 35.8 | 36.6 | 34.8 | 35.5 | 36.7 | 36.7 | 35.2 | 35.2 | 36.1 | 36.1 | 36.0 | 36.0 |

Although consumer prices were consistent for January and July within each market, prices paid by grocers were greater in July than in January by about 1 cent in both Sitka and Ketchikan. Delivered cost to retail grocers was the same in both months for the remaining four markets.

The delivered price paid by wholesale grocers for canned whole milk was obtained only for Anchorage, where it averaged 38 cents per quart can.

Grocers estimated that transportation and handling charges on canned whole milk delivered from Seattle ranged from 1.9 cents to 8.0 cents. The lowest of these charges was applicable both to Sitka and Anchorage, the highest to Fairbanks.

The estimates of transportation and handling charges made for Sitka and Anchorage appear unreasonably low in relation to the charges for delivery to markets near either of them. An explanation of the low rate to Sitka may lie in cooperative shipping arrangements used by the local merchants. The apparently low estimate of transport and handling charges made by Anchorage grocers may be explained by the fact that delivery is made to wholesale grocers who receive preferential rates on large-volume deliveries. Further explanation of the unexpectedly low rates to either city may lie in the difficulty of obtaining accurate estimates for individual products because the method of computing charges is complicated and differs for each product. Most shipments include more than one product, and bills presented are not usually based on a product but on product groups or on total weight, bulk, or services performed.

Evaporated milk

Costs and prices obtained for evaporated milk applied to the 14.5-ounce can. This is the container size which sells in largest volume; only a relatively small amount is sold in either the 6-3/4- or 15-ounce cans.

Average market prices paid by Alaska's consumers for evaporated milk ranged from 16.8 cents to 20.0 cents per can during January and from 17.2 cents to 19.0 cents during July. The price was lowest in Sitka during both January and July and highest in Fairbanks during January. The drop in average price at Fairbanks from 20 to 19 cents per can resulted in this highest average price being paid by consumers in three cities--Kodiak, Anchorage, and Fairbanks (table 9).

The delivered price paid by grocers ranged from 15.3 cents at Ketchikan to 16.4 cents at Anchorage during January, and from 15.3 cents at Ketchikan to 17 cents at Fairbanks during July.

The decrease in the consumer buying price and the increase in the grocer's delivered cost for evaporated milk resulted in a change in the retail price spread in Fairbanks from 4 cents to 2 cents per can. This amount of spread is more in line with the price spread obtained by retail grocers in each of the other five markets.

The problems previously noted in estimating transportation and handling charges are again apparent in discussing evaporated milk. It would be expected that the transportation charges applicable to evaporated milk would be approxi-

Table 9.--Evaporated milk: 1/ Price to consumers, price spread, delivered price to retail grocers, wholesale price spread, price to wholesale grocers, transportation and handling charges, and Seattle price, 14.5-ounce cans, six Alaskan cities, January and July 1957

| Market level | Ketchikan | | Sitka | | Juneau | | Kodiak | | Anchorage | | Fairbanks | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Jan. | July | Jan. | July | Jan. | July | Jan. | July | Jan. | July | Jan. | July |
| | Cents | Cents | Cents | Cents | Cents | Cents | Cents | Cents | Cents | Cents | Cents | Cents |
| Price to consumers | 17.5 | 17.5 | 16.8 | 17.2 | 18.0 | 18.0 | 19.0 | 19.0 | 19.0 | 19.0 | 20.0 | 19.0 |
| Retail price spread | 2.2 | 2.2 | 1.3 | 1.3 | 2.2 | 2.2 | 3.5 | 3.5 | 2.6 | 2.6 | 4.0 | 2.0 |
| Price to retail grocers | 15.3 | 15.3 | 15.5 | 15.9 | 15.8 | 15.8 | 15.5 | 15.5 | 16.4 | 16.4 | 16.0 | 17.0 |
| Wholesale price spread | | | | | | | | | .5 | .5 | | |
| Price to wholesale grocers | | | | | | | | | 15.9 | 15.9 | | |
| Transportation and handling charge | 1.5 | 1.5 | 2.3 | 2.3 | 1.7 | 1.7 | 2.4 | 2.4 | 1.9 | 1.9 | 4.0 | 4.0 |
| Seattle price | 13.8 | 13.8 | 13.2 | 13.6 | 14.1 | 14.1 | 13.1 | 13.1 | 14.0 | 14.0 | 12.0 | 13.0 |

1/ By definition, each 14.5-ounce can of evaporated milk contains an amount of solids and fat equivalent to that in a quart of milk with 4 percent butterfat.



Table 10.--Nonfat dry milk: Price to consumers, price spread, delivered price to retail grocers, wholesale price spread, delivered price to wholesale grocers, transportation and handling charges, and Seattle price, fluid quart equivalent, six Alaskan cities, January and July 1957 1/

| Market level | Ketchikan | | Sitka | | Juneau | | Kodiak | | Anchorage | | Fairbanks | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Jan. | July | Jan. | July | Jan. | July | Jan. | July | Jan. | July | Jan. | July |
| | Cents | Cents | Cents | Cents | Cents | Cents | Cents | Cents | Cents | Cents | Cents | Cents |
| Price to consumers | 11.0 | 11.0 | 11.0 | 11.2 | 9.9 | 9.9 | 11.0 | 11.0 | 11.3 | 11.3 | 12.0 | 12.0 |
| Retail price spread | 1.5 | 2.0 | 2.0 | 1.6 | 4.0 | 4.0 | 3.0 | 3.0 | 2.9 | 2.9 | 4.0 | 3.6 |
| Price to retail grocers | 9.5 | 9.0 | 9.0 | 9.6 | 5.9 | 5.9 | 8.0 | 8.0 | 8.4 | 8.4 | 8.0 | 8.4 |
| Wholesale price spread | | | | | | | | | | | | |
| Price to wholesale grocers | | | | | | | | | 8.4 | 8.4 | 8.0 | 8.4 |
| Transportation and handling charge | .4 | .4 | .5 | .5 | .3 | .3 | .5 | .5 | .5 | .5 | .4 | .4 |
| Seattle price | 9.1 | 8.6 | 8.5 | 9.1 | 5.6 | 5.6 | 7.5 | 7.5 | 7.9 | 7.9 | 7.6 | 8.0 |

1/ Prices based on fluid equivalent indicated on the package.

mately half of those applicable to canned whole milk, as the former is approximately half the weight and volume of the latter. Such a relationship is noted for Ketchikan, Kodiak, and Fairbanks. A wide variation in relationships is noted for the remaining three markets, ranging from equal charges per can for Anchorage to about 20 percent greater for evaporated milk delivered to Sitka.

Nonfat dry milk

The price paid by Alaskans for nonfat dry milk, which made it the lowest cost source of fluid milk, ranged from 9.9 cents to 12.0 cents per fluid quart equivalent. The prices paid were stable, as evidenced by the same average price prevailing during January and July for each of the markets except Sitka, where the price was fractionally higher during July (table 10).

The average delivered price paid by retail grocers in each market varied from 5.9 cents to 9.0 cents during January and from 5.9 cents to 9.6 cents during July for a fluid quart equivalent of nonfat dry milk. Changes in the average delivered price were in the form of increases for Sitka and Fairbanks and a decrease for Ketchikan.

Anchorage's wholesale grocers paid 8.4 cents per quart equivalent for nonfat dry milk during both January and July. In Fairbanks, wholesale grocers paid an average of 8.0 cents during January and, because of a 0.4-cent increase in Seattle price, 8.4 cents per quart equivalent during July.

The average price reported as paid by retail grocers in both Anchorage and Fairbanks was the same as that paid by the wholesale grocers. This was the result of a combination of the following three factors: (1) Both wholesale and retail grocers obtain supplies directly from Seattle suppliers at similar prices; (2) vertical integration has occurred, and most of the markup has been shifted to the retail level; and (3) the cost delivered to retail grocers was underestimated, that to wholesale grocers overestimated.

The transportation and handling charges for a fluid quart equivalent of nonfat dry milk delivered from Seattle to the various markets in Alaska ranged from 0.3 cent to 0.5 cent. The low cost of transport is an important factor in holding down consumer prices. The low rate of charges results from reduction in weight, lack of special service requirements while in transit, and ability to handle this product by mechanical means.

## Competitive Relationships

An absolute measure of the competitive nature of supply sources used by Alaskans to fulfill their fluid milk requirements is beyond the scope of the data obtained for this study. The data do afford the information necessary to permit a comparative description of both intramarket and intermarket relationships.

Intermarket

The distances between Alaska's larger cities, the topography of the intervening areas, low population concentrations outside the major cities, and the absence of a low-cost, frequently scheduled, intermarket freight transport system have prevented direct intermarket competition of milk products or of their suppliers. A partial exception to this statement is noticeable in the corporate connection of distributors of both fresh and manufactured products serving Anchorage and Fairbanks. This appears to be a natural result of population concentration, suitable transport, and economies of scale obtainable in dairy plant operation, as well as availability of supply.

Although direct intermarket competition is generally precluded, there is a tendency toward a fixed relationship of prices, based on transportation differentials. Such price relationships have resulted from the fact that each of Alaska's markets obtained a significant portion of its milk product requirements from Seattle. These relationships are maintained by the willingness and ability of Seattle suppliers to supply any quantity necessary at the prevailing Seattle price. Therefore, if the price of a locally produced milk product rises above the Seattle price plus its delivery cost in any Alaskan market, additional quantities may be expected from Seattle. This will force prices back into their pattern of "fixed" relationship. This relationship will undoubtedly vary from time to time, but within a limited range, as changes occur in local supply, in local economic conditions, or in the degree of consumer loyalty to locally produced products as evidenced by willingness to pay a premium for such products.

Intramarket, among firms

The Alaskan cities surveyed have small populations relative to major markets of other States. This is an effective deterrent to the establishment of more than a limited number of firms at each market level, resulting in a competitively imperfect market situation. The apparent competitive nature of the market is further limited in some markets by either horizontal or vertical integration, or both.

Integration has been of great importance in establishing the competitive character of the wholesale and retail grocery industry as well as that of the dairy industry. Examples of integration are to be found in the corporate connections existing between grocers at the wholesale and retail level and the intermarket distribution of fresh, processed, and manufactured dairy products by the Matanuska Valley Farmers' Cooperating Association.

Competition among firms within an industry is based on and limited by many factors. For retail grocery stores, factors that are quickly apparent are location, prices and pricing policy, services, and the variety of products or product brands offered. Indications that Alaska's retail grocers were aware of such factors were given by their dispersion throughout areas of population concentration, the variation in store sizes, and service factors such as convenient parking lots and hours of operation. Pricing policies also were of competitive importance, with emphasis on "specials" or the offering of products at attractive prices. The recognition of these factors, in particular the recognition of the drawing power of featured product prices, is a measure of the competitive nature of the retail grocery industry.

The competitive natures of the wholesale grocers and dairy product firms in Alaska have much in common. For instance, both types of firms obviously require a large volume of output to be successful, because of low markup and economies of operating scale. As the population of each of the six Alaskan markets surveyed is relatively small, the number of either wholesale grocery or dairy product firms that can successfully compete is also limited. For instance, neither Kodiak nor Sitka has a specialized wholesale grocery, Anchorage is served by two, and the other three markets have one each. Similarly, dairy product firms are limited in number, ranging from none in Sitka to two each in Anchorage and Fairbanks. Although no milk is produced locally for the market in Ketchikan, there are three distributors of bottled milk obtained from Seattle. Juneau and Kodiak each have one dairy plant, the one in Kodiak being very small.

The limited number of firms in each of these industries might be regarded as an indication of market control. The discussion on intermarket price relationships, however, makes it obvious that the effect of abundant supplies readily available from Seattle is a deterrent to unfair market prices or to undue market control. In addition, at least one retail grocer in Juneau is known to favor buying bottled milk directly from Seattle as a price control measure--a practice that he closely follows.

Although the limited number of firms in the wholesale grocery and dairy product industries may appear undesirable, the factors of economies of scale theoretically obtainable plus the possibility of competition from Seattle firms if prices are beyond a certain maximum suggest that the limited number of firms may offer more services at a lower real cost than could a number of smaller, more competitive, but higher cost firms with the same market.

Intramarket, among products

A variety of alternative dairy products is available to Alaskans in each of the six markets surveyed. This variety results in competition for the consumer's attention, although some products have special characteristics that make them more attractive to some consumers than to others. For instance, persons who live at a distance from a market center and must travel over inadequate roads to the market, or who lack refrigeration, would tend to purchase manufactured dairy products that are light in weight or do not require refrigeration. If relative prices for the alternative products or brands shift, then consumers may also change their buying habits, reducing their purchases of the relatively higher priced items and supplementing with the relatively lower priced ones. Thus the variety of alternative products and of brands results in interproduct and brand competition for the consumer's dollar.

## Fresh Whole Milk Relative to Total Milk Equivalent

The proportionate volume of bottled milk purchased by Alaskans, relative to their total milk equivalent purchases, varied among markets from 11.1 percent to 52.8 percent for January and from 15.1 percent to 52.4 percent for July (table 11). Three factors with possible effects on the relative use of bottled milk are its price, its availability from local sources, and the level of income within the market.

Table 11.--Ratio of bottled milk to total fluid milk equivalent, adjusted average price per quart, and annual median income, six Alaskan cities, January and July 1957 1/

| Market | Ratio of bottled milk to total milk equivalent | | Adjusted price 2/ of bottled milk | | Median annual income of persons over 14 3/ |
|---|---|---|---|---|---|
| | January | July | January | July | |
| | Percent | Percent | Cents | Cents | Dollars |
| Ketchikan 4/ | 37.6 | 36.7 | 28.6 | 28.8 | 2,667 |
| Sitka | 11.1 | 15.1 | 27.6 | 27.9 | 5/ 1,866 |
| Kodiak | 24.7 | 21.9 | 29.8 | 30.0 | 5/ 1,845 |
| Juneau | 46.6 | 47.8 | 28.1 | 28.7 | 2,921 |
| Anchorage | 52.8 | 52.4 | 29.8 | 29.4 | 4,154 |
| Fairbanks | 40.8 | 39.4 | 31.8 | 32.0 | 3,516 |
| Average | 44.9 | 44.3 | | | |

1/ See table 3, p. 15.

2/ Bottled milk price for each market was converted to a corresponding Seattle price according to the ratio of price of a selected list of retail food products in that market and in Seattle.

3/ 1950 Census of Population, Vol. II, Characteristics of the Population, Part 51, Territories and Possessions, pp. 27-28 (table 24).

4/ Includes some recombined milk.

5/ Based on rural income within judicial area, as median income was not determined for these cities.

Comparison of the proportionate use of bottled milk to its adjusted price, by market, gave no indication of a volume-price relationship. 8/ For instance, the July adjusted price was higher than that for January in all but one market, Anchorage. In two markets, the proportionate use of bottled milk increased and in four it decreased. Changes were fractional in all cases.

Further comparison of the proportionate volume of bottled milk used with the annual median income for each market shows that the proportionate volume increases as median income increases. Sitka presents an exception to this order, having a slightly higher median income than Kodiak but a lower proportionate use of bottled milk. This reversal of order may be attributed to the availability of locally produced milk in Kodiak but not in Sitka.

The proportionate use of bottled milk is higher in markets more nearly self-sufficient in bottled milk supply. This may be a result of a preference for "home" products, although no attempt was made to measure this. Product freshness may also help establish a preference for bottled milk over its alternatives.

8/ Price for each market was converted to a corresponding Seattle price at that market.

## Department of Defense

The Department of Defense maintains its larger Alaskan military posts near Anchorage and Fairbanks and at the Kodiak Naval Base, on the island of Kodiak. Smaller posts and detachments, located throughout the territory, are supplied by the larger facilities or, as in the case of some personnel assigned to operate the Alaska Communications System, are integrated into the civilian economy.

The Department of Defense follows a policy of purchasing from local sources when desired products are available in suitable quantity and quality. Recombined milk, processed in Alaska, meets the established specifications and is obtained instead of locally produced milk, which is not available in sufficient quantity to supply completely both civilian and military requirements.

Recombined milk and processed fluid milk products are obtained by the various military posts under contract. Contracts, which are negotiated separately for each post, differ among posts depending upon their location relative to that of the supplier's plant. Thus the prices paid for products delivered to two posts by the same supplying plant will tend to differ by differences in cost of delivery.

The military obtains its supply of manufactured dairy products from the Seattle Military Subsistence Center. Supplies are requisitioned, as necessary, for both troop issue and commissary resale. Transportation is under terms of Government bills of lading and therefore has no direct cost to the receiver.

### Prices paid by Department of Defense

The prices paid by the Department of Defense for most dairy products used for fluid purposes were the same during both January and July (table 12). Such changes as occurred were fractional. Products for which increases were reported were nonfat dry milk and buttermilk; a decrease in price was reported for purchases of recombined milk.

Prices paid for various products purchased by the military would be expected to be stable because of purchase by bid and contract. The bid aspect would tend to result in a minimum purchase price, while the length of the contracting period would fix prices for that particular time period. The small amount and limited number of product price changes bear this out.

Military contracts for local purchases are important to an economy which has only limited market potential, as has Alaska. The purchase of recombined milk by the military has resulted in (1) stable prices to the military, (2) reduced unit costs to the processor, (3) improved returns to local milk producers, and (4) probable lower costs of bottled milk to civilian consumers.

### Comparison of prices paid

Comparison of the prices paid by the Department of Defense and by Anchorage retail grocers shows that the military purchases are made at a price 2 to 3 cents per quart below that paid by civilian retail grocers (table 13).

Table 12.--Fluid-use milk products: Delivered prices paid by Department of Defense in Alaska for specified products, January and July 1957

| Product | Unit | January | July |
|---|---|---|---|
| | | Cents | Cents |
| Bottled milk: | | | |
| Locally produced milk 1/ | Quart | 32.00 | 32.00 |
| Recombined milk ..... | Quart | 21.47 | 20.92 |
| Recombined milk ..... | Half-pint | 7.27 | 7.00 |
| Frozen milk 2/ ..... | Quart | 21.69 | 21.69 |
| Buttermilk ..... | Quart | 22.55 | 23.15 |
| Chocolate drink ..... | Quart | 23.45 | 23.45 |
| Concentrated 3 to 1 ..... | 1/3 quart | 21.30 | 21.30 |
| Canned whole milk ..... | 8 ounces | 13.00 | 13.00 |
| Evaporated milk ..... | 14.5 ounces | 12.60 | 12.60 |
| Nonfat dry milk ..... | Quart | 6.82 | 6.90 |
| Cottage cheese ..... | Pint | 35.00 | 35.00 |

1/ Obtained only for commissary resale.
2/ Obtained from Seattle only for the Kodiak Naval Base.

Table 13.--Comparative delivered prices paid for specified milk products by Department of Defense and by Anchorage retail grocers, January and July 1957

| Product | Unit | Department of Defense | | Anchorage retail grocers | |
|---|---|---|---|---|---|
| | | January | July | January | July |
| | | Cents | Cents | Cents | Cents |
| Locally produced milk ..... | Quart | 32.0 | 32.0 | 35.0 | 35.0 |
| Evaporated milk ..... | 14.5 ounces | 12.6 | 12.6 | 16.4 | 16.4 |
| Nonfat dry milk ..... | Quart | 6.8 | 6.8 | 8.4 | 8.4 |

Although resale prices were not available, established commissary policy was to resell products at or near cost. Therefore, the price advantage to consumers with commissary privileges was probably significant, relative to prices paid by consumers without this privilege.

Volume of milk utilization

More than two-thirds of the fluid equivalent of milk utilized by military personnel was recombined milk, during both survey months. Recombined milk sales totaled 798,117 quarts during January. Eleven percent less, or a total of 710,446 quarts, was used during July, although sales of concentrated milk were 17.8 percent higher during July than January. The total equivalent of milk

utilized for all products was 101,699 quarts less during July than January, representing a decrease in utilization of all products except concentrated milk (table 14). Probable reasons for this decreased use were official leave, dependents' vacations, and increased field activities with greater dependence on packaged rations and less on mess-hall operation.

Table 14.--Total milk requirements of Department of Defense in Alaska, January and July 1957

| Product | Usual unit | January | July |
|---|---|---|---|
| | | Quart equivalent | Quart equivalent |
| Bottled milk: | | | |
| Locally produced milk ... | Quart | 44,140 | 27,814 |
| Recombined milk ..... | Quart | 146,872 | 92,436 |
| Recombined milk ..... | Half-pint | 651,245 | 618,010 |
| Buttermilk ..... | Quart | 5,024 | 4,016 |
| Chocolate drink ..... | Quart | 2,497 | 3,223 |
| Cottage cheese ..... | Pint | 5,317 | 4,621 |
| Frozen milk ..... | Quart | 72,600 | 72,600 |
| Concentrated 3 to 1 ..... | 1/3 quart | 99,667 | 117,463 |
| Canned whole milk ..... | Quart | 4,800 | 8,144 |
| Evaporated milk ..... | 14.5 ounces | 156,192 | 136,944 |
| Half-and-half cream ..... | Quart | 3,272 | 1,382 |
| Nonfat dry milk ..... | Quart | 5,672 | 6,780 |
| Whole milk powder ..... | Quart | 9,424 | 12,120 |
| Whipping cream ..... | Quart | 424 | 106 |
| Total quart equivalent ..... | | 1,207,146 | 1,105,447 |

Military personnel assigned to Alaska as of June 1957 were 44,129. 9/ An estimate of 50,000 persons has been used to calculate consumption, in order to allow for dependents of military personnel who might be supplied by purchases from the commissaries. On the assumption that this estimate is reasonably correct, average daily milk consumption per person was calculated to be 0.8 quart during January and 0.7 quart during July. Over half of the total consumption in both months was of recombined milk.

The purchase of locally produced bottled milk by the military is of particular interest. It offers a potential market for seasonal surplus production, or for any increase in production of locally produced bottled milk. Yet, it faces a competitive challenge of milk from alternative sources and products. If this challenge can be met, the limit for the local industry does not appear to have been reached.

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9/ Letter dated November 20, 1959, James G. Dunston, Director, office of Public Service, Department of Defense, to Anthony G. Mathis, Department of Agriculture.



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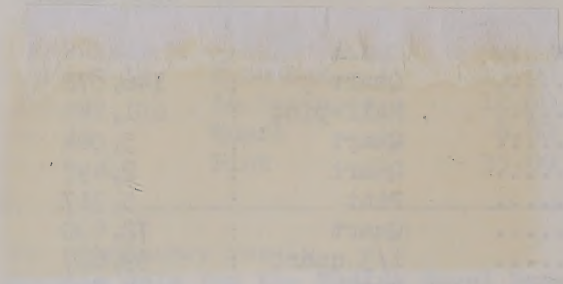

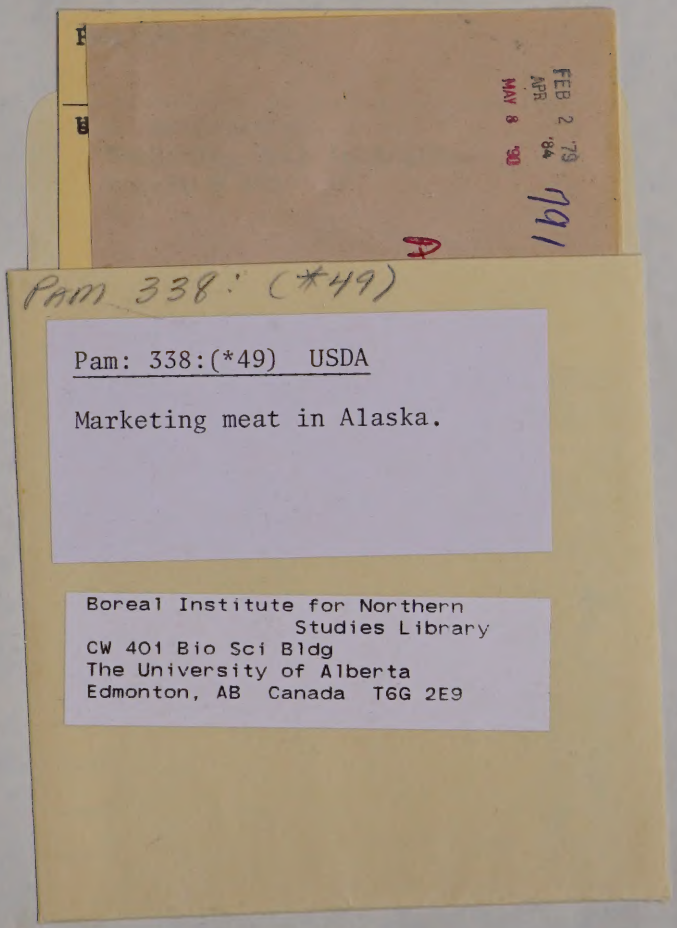
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